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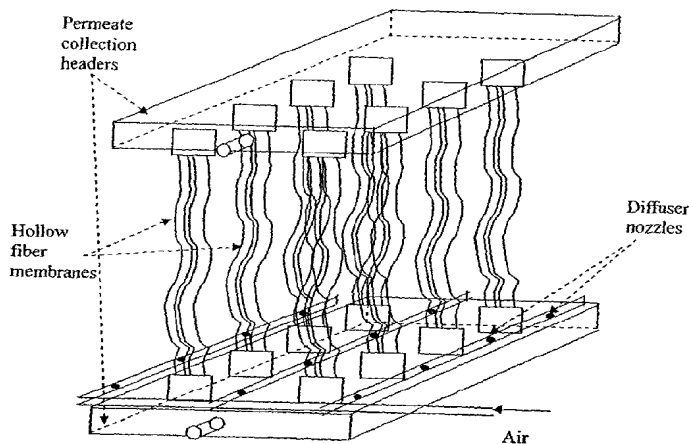
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(54) Title: METHODS FOR CLEANING AND MAINTAINING MEMBRANE SURFACE DURING FILTRATION



(57) Abstract: A method is provided for cleaning a membrane surface or maintaining a clean outside surface of a membrane during a process of outside-in membrane separation to remove suspended solids from a liquid phase. The method involves applying pressurized gas pulses to the membrane surface with individual pulse lengths of about 0.1 to 10 seconds. The pulses may be injected singularly with an interval of about 10 to 1000 seconds between pulses for a total duration of about 0.1 to 1000 hours. Alternatively, the pulses may be injected in clusters of about 2 to 100 pulses with an interval of 50 -300 % of the pulse length between individual pulses for a total duration of about 10 to 1000 seconds. In a preferred embodiment, both types of pulsation methods are combined in a particular sequence. The expanding gas directed toward the membrane surface in the course of one pulse dissipates energy of up to about 40 kJ/m<sup>2</sup>. One embodiment of the cleaning method involves backwashing the membrane with a permeate and applying the pressurized gas pulses during the filtration and/or backwashing steps of a filtration cycle.



WO 2004/056458 A3



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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## A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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